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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

PATENT APPLICATION

ATTORNEY DOCKET NO. 10007240-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Robert A. Cochran et al.

Confirmation No.:

Application No.: 09/726,852

Examiner: Piotr Poltarak

Filing Date: November 30, 2000

Group Art Unit: 2134

Title: Method and System for Securing Control-Device-LUN-Mediated Access toLUNs Provided by a Mass Storage Device

Mail Stop Appeal Brief - Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF REPLY BRIEF

Transmitted herewith is the Reply Brief with respect to the Examiner's Answer mailed on April 18, 2007 .

This Reply Brief is being filed pursuant to 37 CFR 1.193(b) within two months of the date of the Examiner's Answer.

(Note: Extensions of time are not allowed under 37 CFR 1.136(a))

(Note: Failure to file a Reply Brief will result in dismissal of the Appeal as to the claims made subject to an expressly stated new ground rejection.)

No fee is required for filing of this Reply Brief.

If any fees are required please charge Deposit Account 08-2025.

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Date of facsimile:

Typed Name: Joanne Bourguignon

Signature:

Respectfully submitted,

Robert A. Cochran et al.

By

Robert W. Bergstrom

Attorney/Agent for Applicant(s)

Reg No. : 39,906

Date : June 18, 2007

Telephone : 206.621.1933

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OIPE IAP22
JUN 21 2007
PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Inventors: Robert A. Cochran and Gregory D. Dolkas

Serial No. 09/726,852

Filed: November 30, 2000

For: Method and System for Securing Control-Device-LUN-Mediated Access to LUNs Provided by a Mass Storage Device

Examiner: Piotr Poltorak

Group Art Unit: 2134

Docket No. 10007240-1

Date: June 18, 2007

REPLY BRIEF UNDER 37 CFR 41.41(a)(1)

Mail Stop Board of Patent Appeals and interferences
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Examiner's Answer dated April 18, 2007, applicant replies as follows:

REAL PARTY IN INTEREST

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

RELATED APPEALS AND INTERFERENCES

Applicant's Representative has not identified, and does not know of, any other

appeals of interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-10 are pending in the application. Claims were finally rejected in the Office Action dated February 28, 2005. Applicant's appeal the final rejection of claims 1-10, which are copied in the attached CLAIMS APPENDIX.

STATUS OF AMENDMENTS

The last Response was filed September 7, 2004.

SUMMARY OF CLAIMED SUBJECT MATTER

The current application is directed towards a method for securing control-device-logical-unit ("CDLUN") operations within a disk-array controller (206 in Figure 2), or in other mass-storage-device controllers, invoked by remote host computers. As explained in the current application in the two paragraphs beginning on line 27 of page 4, a CDLUN is essentially a type of virtual LUN provided by a mass-storage controller to allow remote, host computers to invoke controller functionality involving multiple LUNs. As explained in the current application, beginning on line 16 of page 3, a LUN, or logical unit, represents some portion of the storage capabilities of a mass-storage-device, and a disk-array controller, or other mass-storage-device controller, provides LUNs (208–215 in Figure 2) as interfaces to the various portions, or partitions, of mass-storage space (203-205 in Figure 2) within a mass-storage device (202 in Figure 2). Certain operations, such as LUN mirroring, involve multiple LUNs. The CDLUN was devised as a target for addressing requests by remote host computers to a mass-storage-device controller for multi-LUN, or multi-partition, operations, such as a request to mirror one LUN to a different LUN, and for other mass-storage-device controller operations.

Although CDLUNs serve admirably in the capacity intended, an additional problem was subsequently discovered. In general, access to individual LUNs, and to operations carried out with respect to individual LUNs, is controlled by various security mechanisms. For example, a remote host computer storing sensitive data on a particular LUN of a disk array generally arranges for the LUN storing sensitive data to be at least write-protected, and often both read-protected and write-protected, so that only the remote host

computer, and no other remote host computer, can access the sensitive data. These security mechanisms are easily extended to CDLUNs. Thus, for example, only authorized remote host computers can request mirroring operations through a particular CDLUN. However, these security mechanisms have proven to be inadequate to prevent unauthorized access to individual LUNs as a result of multi-LUN operations requested through CDLUNs. For example, although remote host computer A may have neither read nor write access to LUN X, remote host computer A may still alter the contents of LUN X by, for example, requesting that LUN Y be mirrored to LUN X by sending a multi-LUN request to a CDLUN to which remote host computer A is authorized to send multi-LUN requests. Embodiments of the present invention address this potential security and access problem, and other related problems.

Independent claim 1 and dependent claims 2-5 that depend from claim 1 claim a method for authorizing access by remote entities to logical units provided by a mass storage device. The method includes steps of: (1) providing an access table that includes entries that each represents authorization of a particular remote entity to access a particular logical unit; (2) providing a supplemental access table that includes entries that each represents authorization of a particular control device logical unit to access a particular logical unit; and (3) when a remote entity requests execution of an operation directed to a specified control device logical unit and involving one or more additional specified logical units, authorizing the request for execution of the operation only when an entry currently exists in the access table that represents authorization of the remote entity to access the specified control device logical unit and, for each of the one or more additional specified logical units, an entry exists in the supplemental access table that represents authorization of the specified control device logical unit to access the additional specified logical unit.

Independent claim 6 and dependent claims 7-10 that depend from claim 6 claim an authorization system for authorizing access by remote entities to logical units provided by a mass storage device. The claimed authorization system includes: (1) a request detecting component that detects requests for execution of an operation generated by a remote entity; (2) an access table that includes entries that each represents authorization of a particular remote entity to access a particular logical unit; (3) a supplemental access table that includes entries that each represents authorization of a particular control device logical unit to access a particular logical unit; and (4) control logic that authorizes a request made by a remote entity, detected by the request detecting component, directed to a specified control device logical unit and involving one or more additional specified logical units only when an

entry exists in the access table that represents authorization of the remote entity to access the specified control device logical unit and, for each of the one or more additional specified logical units, an entry exists in the supplemental access table that represents authorization of the specified control device logical unit to access the additional specified logical unit.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether the 35 U.S.C. § 102(e) rejections of claims 1-10 as being anticipated by Ito et al., U.S. Patent No. 6,684,209 represent a reasonable and substantial new ground for rejection that would supplement or eclipse the issues already identified in the Appeal originally filed by Applicants on July 28, 2005.

ARGUMENT

Claims 1-10 are currently pending in the application. In the Examiner's Answer, dated April 18, 2007, the Examiner withdrew the 35 U.S.C. § 112, second paragraph, rejections of claims 1, 2, 4-5, 7, and 9-10 and the 35 U.S.C. § 103(a) rejections of claims 1-2, 4, 6-7, and 9 under 35 U.S.C. § 103(a) as being obvious over Tulloch, "Administering Internet Information Server 4," New York, McGraw-Hill Professional, 1998, ISBN: 0072128232 ("Tulloch") in view of "Microsoft Windows NT Server, Resource Guide," Microsoft Press, 1996, ISBN: 1,57231,344,7 ("Windows NT"), while maintaining the 35 U.S.C. § 102(e) rejections of claims 1-10 as being anticipated by Ito et al., U.S. Patent No. 6,684,209 ("Ito"). Applicants' representative respectfully and gratefully acknowledges the withdrawal of the 35 U.S.C. § 112, second paragraph, and 35 U.S.C. § 103(a) rejections, and respectfully traverses the 35 U.S.C. § 102(e) rejections of claims 1-10.

ISSUE 1

1. Whether the 35 U.S.C. § 102(e) rejections of claims 1-10 as being anticipated by Ito et al., U.S. Patent No. 6,684,209 represent a reasonable and substantial new ground for rejection that would supplement or eclipse the issues already identified in the Appeal originally filed by Applicants on July 28, 2005.

Claims 1-10 of the current application include the following two independent claims:

1. A method for authorizing access by remote entities to logical units provided by a mass storage device comprising:

providing an access table that includes entries that each represents authorization of a particular remote entity to access a particular logical unit;

providing a supplemental access table that includes entries that each represents authorization of a particular control device logical unit to access a particular logical unit; and

when a remote entity requests execution of an operation directed to a specified ***control device logical unit*** and involving one or more additional specified logical units,

authorizing the request for execution of the operation only when an entry currently exists in the access table that represents authorization of the remote entity to access the specified ***control device logical unit*** and, for each of the one or more additional specified logical units, an entry exists in the supplemental access table that represents authorization of the specified ***control device logical unit*** to access the additional specified logical unit. (emphasis added)

6. An authorization system for authorizing access by remote entities to logical units provided by a mass storage device comprising:

a request detecting component that detects requests for execution of an operation generated by a remote entity;

an access table that includes entries that each represents authorization of a particular remote entity to access a particular logical unit;

a supplemental access table that includes entries that each represents authorization of a particular ***control device logical unit*** to access a particular logical unit; and

control logic that authorizes a request made by a remote entity, detected by the request detecting component, directed to a specified ***control device logical unit*** and involving one or more additional specified logical units only when an entry exists in the access table that represents authorization of the remote entity to access the specified ***control device logical unit*** and, for each of the one or more additional specified logical units, an entry exists in the supplemental access table that represents authorization of the specified ***control device logical unit*** to access the additional specified logical unit. (emphasis added)

Both claims 1 and 6 include much common language, with claim 1 directed to a method for authorizing access to logical units provided by a mass-storage device and claim 6 directed to an authorization system for authorizing access to logical units provided by a mass-storage device. In the interest of brevity, the following discussion is focused on claim 1, since almost identical arguments would otherwise be offered independently for claims 1 and 6.

The first element of claim 1 provides "an access table that includes entries that each represents authorization of a particular remote entity to access a particular logical unit."

In other words, each entry of the access table represents authorization of a particular remote, host computer to access a particular logical unit provided by the mass-storage device. Implementation of the access table can be seen in the pseudocode class declarations on lines 1-32 of the pseudocode provided on page 13 of the current application. Each access-table entry includes: (1) *ln*, a numeric representation of a logical-unit number ("LUN"), declared on line 4 of the pseudocode; (2) *pt*, a numeric indication of a particular port within the mass-storage device, declared on line 5 of the pseudocode; and (3) *sv*, a numeric indication of remote host computer, declared on line 6 of the pseudocode. An access-table entry specifies that a particular remote entity, *sv*, can access LUN *ln* through port *pt*, as discussed in the paragraph beginning on line 7 of page 6 in the current application.

The second element of claim 1 provides "a supplemental access table that includes entries that each represents authorization of a particular control device logical unit ("CDLUN") to access a particular logical unit. A pseudocode implementation of the supplemental access table is shown in lines 1-29 of the pseudocode provided on page 22 of the current application. Each entry of the supplemental-access table includes two fields: (1) *ln*, a numeric representation of a LUN declared on line 4 of the pseudocode; and (2) *cd*, a numeric representation of a CDLUN, declared on line 5 of the pseudocode. Presence of an entry in the supplemental access table indicates that the CDLUN specified in the entry can access the LUN specified in the entry, as discussed on lines 40-42 of page 22, below the pseudocode, and elsewhere in the current application.

The third element of claim 1 specifies that, "when a remote entity requests execution of an operation directed to a specified control device logical unit and involving one or more additional specified logical units," then the request for execution of the operation is authorized "only when an entry currently exists in the access table that represents authorization of the remote entity to access the specified control device logical unit and, for each of the one or more additional specified logical units, an entry exists in the supplemental access table that represents authorization of the specified control device logical unit to access the additional specified logical unit." In other words, when a host computer directs an operation to a CDLUN, a special type of LUN, discussed below, that represents an operation carried out by a disk array, rather than a portion of a physical logical unit, then an entry must be found in the access table that authorizes the host computer to access the CDLUN, and, in addition, an entry must also be found in the supplemental access table for each logical unit involved in the operation represented by the CDLUN that authorizes the CDLUN to access each of the logical units. For example, were a host computer ($sv = 10$) to direct an operation

represented by CDLUN 5 ($cd = 5$) that involves LUNS 1, 2, and 3 ($ln = \{1, 2, 3\}$) to a disk array through port 7 ($pt = 7$), then, according to claim 1, the operation would be authorized only in the case that an entry in the access table exists with field values $\{ln = 5, pt = 7, sv = 10\}$ and three entries exist in the supplemental access table with field values $\{ln = 1, cd = 5\}$, $\{ln = 2, cd = 5\}$, $\{ln = 3, cd = 5\}$. The access table authorizes access by the host computer to the CDLUN, and the supplemental access table authorizes access, by the CDLUN, to each of the additional specified logical units 1, 2, and 3. The access table authorizes host computers to access mass-storage-device-provided LUNs, and the supplemental access table authorizes mass-storage-device-provided CDLUNs to access particular mass-storage-device-provided LUNs.

Appellant's representative agrees with the Examiner's statement in the final paragraph of page 3. Ito does indeed teach a storage subsystem with ports through which the storage subsystem communicates with host computers. Ito does indeed teach a "LUN access management table," each entry of which specifies a host-computer port name, a LUN, and a synonym or alias for the LUN, referred to by Ito as a "virtual LUN." Appellant's representative agrees with the middle paragraph of page 4 of the Examiner's Answer, in which the Examiner describes authorization of a host computer to access a particular LUN based on Ito's "LUN Access Management Table." However, Appellants' representative emphatically disagrees with the Examiner's first, conclusory paragraph on page 4 of the Examiner's Answer, in which the Examiner states:

> This reads on an access table that includes entries that each represents authorization of a particular remote entity to access a particular logical unit and a supplemental access table that includes entries that each represents authorization of a particular control device logical unit to access a particular logical unit.

The above-quoted conclusory paragraph does not follow from anything in Ito or even from the Examiner's summary of Ito in the last paragraph of page 3 of the Examiner's Answer and in the middle paragraph of page 4 of the Examiner's Answer. Ito describes a single "LUN Access Management Table" with entries that each authorize a port of a host computer to access a single LUN provided by Ito's storage subsystem. In other words, Ito's "LUN Access Management Table" is quite similar, in structure and use, to the access table referred to in the first element of claim 1 and described in the current application, with the exception that Ito provides aliases, or synonyms, for the physical LUN in each of Ito's LUN-Access-Management-Table entry. However, nowhere in Ito, or in the Examiner's summaries, are CDLUNs mentioned, nowhere in Ito is there mention of any kind of table that authorizes

access of LUNs of the storage subsystem by other LUNs of the storage system, and nowhere in Ito is there a description or suggestion of a two-part access authorization involving two different tables containing access-authorization information. The Examiner's conclusory statement, in the first paragraph on page 4 of the Examiner's Answer, does not follow from anything disclosed in Ito or anything stated in the Examiner's summaries. Similarly, the second conclusory statement in the last, incomplete paragraph of page 4 of the Examiner's Answer and the first two lines of page 5 of the Examiner's Answer does not follow from either Ito or the Examiner's essentially accurate summary of Ito. Ito does not discuss, mention, or suggest a supplemental access table, each entry of which authorizes access of LUNs of Ito's storage subsystem by other LUNs of Ito's storage subsystem.

The term "control device logical unit" ("CDLUN") is a term of art well known to those skilled in the art of designing and manufacturing fiber-channel-connected storage subsystems, such as the disk arrays and other, similar mass-storage devices discussed in the current application and the storage subsystem discussed in Ito. Beginning on line 10 of page 5 of the current application, CDLUNs are described as follows:

> To reconcile the fact that a number of operations provided to a requesting remote computer by a disk array controller may involve multiple LUNs to the fact that, in general, in invoking any particular operation during many current disk array controller interfaces, a remote computer must specify a single target LUN, a type of virtual LUN known as a control-device LUN ("CDLUN") is provided by disk array controllers as part of the interface through which remote computers invoke operations. CDLUNs are essentially points of access to various operations provided by, and carried out by, a disk array controller. (Emphasis added)

CDLUNs are additionally discussed in the Request for Reinstatement of the Appeal, filed February 17, 2006, and in the original Appeal Brief, filed July 28, 2005.

As clearly stated in the current application, a CDLUN does not correspond to a physical LUN, but instead provides a means for host computers to direct multi-LUN operations and other administrative operations to a disk array or other mass-storage device. CDLUNs are well known in disk arrays and storage subsystems, and are well defined in the current application.

It is apparent, from the Examiner's comments in section (10) of the Examiner's Answer, that the Examiner has rather arbitrarily decided that Applicant's clearly defined and well-known claim term CDLUN, or control device logical unit, is equivalent to Ito's virtual LUN. However, as even the Examiner admits in the final paragraph of page 3 of the

Examiner's Answer, Ito's virtual LUN is simply an alias, or synonym, for a physical LUN. As clearly shown in Figure 16 of Ito, as described by the Examiner in the final paragraph of page 3 of the Examiner's Answer, and as well described throughout Ito, including in the paragraph beginning on line 17 of column 12, there is a one-to-one mapping between virtual LUNs and real LUNs in Ito's storage subsystem. Ito employs virtual LUNs, essentially aliases for physical LUNs, in order to not expose physical LUN numbers to host computers. Ito's virtual LUNs have absolutely nothing whatsoever to do with control device logical units, or CDLUNs. Ito does not teach, mention, or suggest that Ito's virtual LUNs bear any resemblance or connection with CDLUNS, and Ito does not once use the term CDLUN or the equivalent phrase "control device logical unit." CDLUNs do not correspond to physical LUNs, as discussed in the above-quoted paragraph in the current application, and as well known to anyone familiar with modern disk arrays and storage subsystems. The CDLUN is merely a means to allow a host computer to specify certain types of operations, often involving either multiple physical LUNs or no LUNs, to a disk array or storage subsystem that expects each request to contain an indication of a LUN. Because the term "CDLUN" or "control device logical unit" is standard, well-known terminology, because Ito does not once use this term, or provide any kind of suggestion for a virtual LUN equivalent to a CDLUN, it is abundantly clear that Ito does not include any disclosure directed or related to CDLUNs. Ito's virtual LUNs are simply aliases or synonyms for physical LUNs. For this reason alone, Ito cannot possible anticipate either of independent claims 1 and 6, which specifically and repeatedly mention control device logical units, as emphasized by italicization and bolding in the above-provided claims 1 and 6..

On page 6 of the Examiner's Answer, the Examiner states:

> It is not clear how appellant derived the conclusion that Ito does not disclose "both LUNs and CDLUNs" due to "a strict, one-to-one mapping between LUNs and virtual LUNs." Additionally, the examiner points out that the claim language does not include a limitation that would preclude one-to-one mapping between LUNs and CDLUNs. In fact, claim 1 clearly discloses limitation permitting a single mapping of LUN and CDLUN (". . . when a remote entity requests execution of an operation directed to a specific control device logical unit and involving one or more additional specified logical units . . .").

In Appellant's respectfully offered opinion, the Examiner has missed the point of Appellants' argument. Appellants do not argue that Ito does not disclose "both LUNs and CDLUNs" due to a "strict, one-to-one mapping between LUNs and virtual LUNs." Instead, Appellant points out that a CDLUN is not a physical LUN. A CDLUN is simply a numeric specification of an

operation carried out by a disk array, storage subsystem, or other mass-storage device. Appellants' representative has pointed out the one-to-one mapping between LUNs and virtual LUNs in Ito to show that, in Ito, a virtual LUN is equivalent to a physical LUN. It is simply another numeric designation for a physical LUN, or, as commonly described in computing, an alias or synonym for a physical LUN. Ito's virtual LUNs do not represent operations carried out by Ito's storage subsystem. Again, a CDLUN is not a physical LUN. By contrast, virtual LUNs in Ito are physical LUNs.

On page 6 of the Examiner's Answer, the Examiner further states:

> Furthermore, the claim language does not include the limitation: 'CDLUN is used by remote host computers as a single target, or single numerical value, to represent controller functionality involving multiple LUNs.' Appellant is reminded that although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

Appellant's representative frequently encounters such statements in Office Actions. Using a well-known term in the art that is additionally well-defined in an application, and insisting that the well-known and well-defined term be accorded its well-known and well-defined meaning, does not have anything to do with importing limitations from the specification. If the claim drafter cannot rely on well-known and well-defined terms to be interpreted according to their well-known and well-defined meanings, and, instead, the claim drafter would be required to precisely define all such terms *in the claims*, rather than in the specification, then there would essentially be no reason to include a specification separate from the claims, and claims would run from tens to hundreds of pages in length. The Examiner is not permitted to arbitrarily redefine well-known and well-defined claim terms in order to read claims onto essentially unrelated disclosures in cited references. The prohibition of importation of limitations from the specification is absolutely irrelevant to the question of whether or not the Examiner can read the well-known and well-defined term CDLUN onto Ito's alias for a physical LUN, which Ito refers to as "virtual LUN." Because CDLUNs are not aliases for physical LUNs, but instead specify operations carried out by disk arrays and storage subsystems, because the term CDLUN is well-known in the art, and because the term CDLUN and the equivalent phrase "control device logical unit" are well defined in the current application, the Examiner cannot read the well-known and well-defined term CDLUN onto Ito's completely unrelated phrase "virtual LUN."

In *Philips v. AWH*, decided on July 12, 2005 by the Federal Circuit, an extensive review of claim interpretation is provided. In *Phillips*, the Court states:

> We have frequently stated that the words of a claim "are generally given their ordinary and customary meaning." *Vitronics*, 90 F.3d at 1582 ... We have made clear, moreover, that the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention ... Importantly, the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. ... Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to "those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean." ... Quite apart from the written description and the prosecution history, the claims themselves provide substantial guidance as to the meaning of particular claim terms. ... The claims, of course, do not stand alone. Rather, they are part of "a fully integrated written instrument," *Markman*, 52 F.3d at 978, consisting principally of a specification that concludes with the claims. For that reason, claims "must be read in view of the specification, of which they are part." ... On numerous occasions since then, we have affirmed that point, stating that "[t]he best source for understanding a technical term is the specification from which it arose ... Consistent with that general principle, our cases recognize that the specification may reveal a special definition given to the claim term by the patentee that differs from the meaning it would otherwise possess.

In other words, it is clear that the term CDLUN and the equivalent phrase "control device logical unit" cannot be read on Ito's phrase "virtual LUN," since Ito's phrase "virtual LUN" means an alias or synonym for a physical LUN, and the term CDLUN and the equivalent phrase "control device logical unit" are defined, in the current application, to mean an operation carried out by a disk array or other mass storage device on multiple LUNs, or an operation not related to any particular LUN.

On page 8 of the Examiner's Answer, the Examiner attempts to justify reading the claim language "access table" and the claim language "supplemental access table" onto a single table, the "LUN access management table" disclosed by Ito. These arguments make no sense, from either a technical viewpoint or from basic principles of claim interpretation. When a claim drafter uses two different terms in a claim, it is assumed that the two different terms refer to two different features, entities, or steps. Otherwise, the claim would be inherently ambiguous. In claims 1 and 6, Appellant clearly claims both an "access table" and a "supplemental access table." Thus, claims 1 and 6 clearly claim two different tables. One table, the access table, is essentially equivalent to Ito's "LUN access management table." Both tables include entries that each authorizes a particular host computer to access a particular LUN provided by a disk array or storage subsystem. In Ito's case, the table includes an additional field that represents an alias for the LUN. However, as clearly

described throughout Ito, Ito's "LUN Access Management Table" serves the identical purposes as the access table claimed in claims 1 and 6 and clearly described in the current application. The "supplemental access table," clearly claimed in claims 1 and 6, is a different table distinct from the access table. As clearly claimed in claims 1 and 6, and as clearly described in the current application, the supplemental access table contains entries that each authorize access, by CDLUNs, to LUNs provided by the disk array or storage subsystem. Ito simply does not teach, mention, or suggest anything equivalent to, or even remotely related to, the currently claimed supplemental access table. Ito makes no mention of any kind of authorization of access to LUNs by internal operations provided by Ito's storage subsystem. As discussed above, Ito does not once teach, mention, or suggest any feature or entity related to CDLUNs. The LUN and virtual LUN in Ito's "LUN access management table" refer to the same, identical physical LUN. It makes no sense for the Examiner to suggest that these two fields represent authorization of access by one LUN to another, since both represent the same physical LUN. Ito does not mention any kind of two-part authorization process for authorizing host computer access to a CDLUN, and separately authorizing access by the CDLUN to a number of additional LUNs. Ito is entirely and completely unrelated to the subject matter to which independent claims 1 and 6, and claims 2-4 and 7-10 that depend from them, are directed.

CONCLUSION

As discussed above, Ito is unrelated to the currently claimed subject matter. Ito does not teach, mention, or suggest the currently claimed supplemental access table, and Ito does not teach, mention, or suggest any kind of two-part authorization in which an access table is first consulted to authorize access by a host computer of a CDLUN provided by a disk array or storage subsystem, and then a supplemental access table is separately consulted to separately authorize access by the CDLUN to additional, separately specified LUNs provided by the disk array or storage subsystem. Because Ito is entirely and completely unrelated to the claimed subject matter, and because the Examiner has withdrawn all former rejections other than the 35 U.S.C. §102(e) rejections based on Ito, Appellant's representative can see no point in returning to prosecution. While Appellant's representative acknowledges that Ito is at least concerned with storage subsystems, and not directed to completely different technical art, as were the cited references in the withdrawn rejections, Ito is, nonetheless, unrelated to the currently claimed subject matter, and Appellant's representative respectfully argues that it would be unfair for Appellant to waste further time and expense in prosecution.

Therefore, Appellant respectfully requests that the appeal be maintained. The Examiner has had ample time to either allow the current claims or to provide a reasonable rejection of the claims, but has failed to do either. A 35 U.S.C. § 102 anticipation rejection of claims based on a reference that does not teach, mention, or suggest a large number of terms, phrases, and method steps clearly recited in the claims, including CDLUN, a supplemental access table, and a two-part authorization process that uses both and access table and a supplemental access table, is not reasonable, in Appellants" representative's respectfully offered opinion.

Applicants respectfully submit that all statutory requirements are met and that the present application is allowable over all the references of record. Therefore, Applicants respectfully requests that the present application be passed to issue.

Respectfully submitted,
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CLAIMS APPENDIX

1. A method for authorizing access by remote entities to logical units provided by a mass storage device comprising:

providing an access table that includes entries that each represents authorization of a particular remote entity to access a particular logical unit;

providing a supplemental access table that includes entries that each represents authorization of a particular control device logical unit to access a particular logical unit; and

when a remote entity requests execution of an operation directed to a specified control device logical unit and involving one or more additional specified logical units,

authorizing the request for execution of the operation only when an entry currently exists in the access table that represents authorization of the remote entity to access the specified control device logical unit and, for each of the one or more additional specified logical units, an entry exists in the supplemental access table that represents authorization of the specified control device logical unit to access the additional specified logical unit.

2. The method of claim 1 wherein the mass storage device includes ports through which requests from remote entities are received, and wherein authorizing a request for execution is carried out by a controller within the mass storage device.

3. The method of claim 2 wherein the access table includes entries each comprising:

an indication of a logical unit or control device logical unit;

an indication of a port; and

an indication of a remote entity.

4. The method of claim 2 wherein the supplemental access table includes entries each comprising:

an indication of a control device logical unit; and

an indication of a logical unit.

5. The method of claim 2 wherein the mass storage device is a disk array and remote entities are remote computers interconnected with the disk array via a communications medium.

6. An authorization system for authorizing access by remote entities to logical units provided by a mass storage device comprising:

a request detecting component that detects requests for execution of an operation generated by a remote entity;

an access table that includes entries that each represents authorization of a particular remote entity to access a particular logical unit;

a supplemental access table that includes entries that each represents authorization of a particular control device logical unit to access a particular logical unit; and

control logic that authorizes a request made by a remote entity, detected by the request detecting component, directed to a specified control device logical unit and involving one or more additional specified logical units only when an entry exists in the access table that represents authorization of the remote entity to access the specified control device logical unit and, for each of the one or more additional specified logical units, an entry exists in the supplemental access table that represents authorization of the specified control device logical unit to access the additional specified logical unit.

7. The system of claim 6 wherein the mass storage device includes ports through which requests from remote entities are received, and wherein the control logic resides within the mass storage device.

8. The system of claim 7 wherein the access table includes entries each comprising:

an indication of a logical unit or control device logical unit;

an indication of a port; and

an indication of a remote entity.

9. The system of claim 7 wherein the supplemental access table includes entries each comprising:

an indication of a control device logical unit; and

an indication of a logical unit.

10. The system of claim 7 wherein the mass storage device is a disk array and remote entities are remote computers interconnected with the disk array via a communications medium.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.